

COMMERCIAL STANDARD CS266-64

WOOD SINGLE-HUNG WINDOW UNITS

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trade published by
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of Commerce**



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NATIONAL BUREAU OF STANDARDS
Office of Commodity Standards

With the cooperation of the
Forest Products Laboratory
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EFFECTIVE DATE

Having been passed through the regular procedures of the Office of Commodity Standards (formerly the Commodity Standards Division, Office of Technical Services; transferred to the National Bureau of Standards July 1, 1963) and approved by the acceptors hereinafter listed, this Commercial Standard is issued by the U. S. Department of Commerce, effective March 17, 1964.

LUTHER H. HODGES, *Secretary.*

COMMERCIAL STANDARDS

Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Office of Commodity Standards of the National Bureau of Standards. Their purpose is to establish quality criteria, standard methods of test, rating, certification, and labeling of manufactured commodities, and to provide uniform bases for fair competition.

The adoption and use of a Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforceable through usual legal channels as a part of the sales contract.

Commercial Standards originate with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Office of Commodity Standards the necessary data to be used as the basis for developing a standard of practice. The office by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the office assures continuous servicing of each Commercial Standard through review and revision whenever, in the opinion of the industry, changing conditions warrant such action.

SIMPLIFIED PRACTICE RECOMMENDATIONS

Under a similar procedure the Office of Commodity Standards cooperates with industries in the establishment of Simplified Practice Recommendations. Their purpose is to eliminate avoidable waste through the establishment of standards of practice for sizes, dimensions, varieties, or other characteristics of specific products; to simplify packaging practices; and to establish simplified methods of performing specific tasks.

The initial printing of CS206-64 was made possible through the cooperation of the National Woodwork Manufacturers Association.

WOOD SINGLE-HUNG WINDOW UNITS

Effective March 17, 1964

1. PURPOSE

1.1 The purpose of this Commercial Standard is to establish nationally recognized standard requirements for the materials, construction, and assembly of stock single-hung wood window units for the guidance of producers, distributors, architects, builders, and the public; to avoid delays and misunderstandings; and to effect economies from the producer to the ultimate user through a wider utilization of these standard items.

2. SCOPE

2.1 This standard provides minimum requirements for single-hung wood units. It covers material, construction, assembly, grading, and tolerances for these requirements.

Essential minimum construction requirements are given for the following:

Window frames.	1 1/8 inch storm sash.
1 3/8 inch single-hung type windows.	3/4 and 1 1/8 inch window screens.
Balancing.	Assembly of component parts into a window unit.
Weather stripping.	

3. GENERAL REQUIREMENTS

3.1 All wood single-hung window units labeled or otherwise designated as complying with this Commercial Standard shall conform to all of the quality requirements contained herein. (see par. 7.1)

3.1.1 TYPE OF WINDOW UNIT—The window unit shall be of the single-hung type with top sash stationary. The bottom sash shall operate freely.

3.1.2 MOISTURE CONTENT OF LUMBER—The wood parts of all windows, storm sash, window screens, and frames shall be made from lumber of an approved species (see 3.1.6) that has been dried and has a moisture content of from 6 to 12 percent at the time of fabrication.

3.1.3 PRESERVATIVE TREATMENT—All wood parts of window units shall be water-repellent preservative treated after cutting in accordance with the latest edition of Commercial Standard CS262, Water-Repellent Preservative Non-Pressure Treatment for Millwork.¹

3.1.4 WEATHERSTRIP—The operative sash shall be weatherstripped. Fixed sash requires no weatherstrip but shall meet the same air infiltration requirements as that specified for the operative sash. At the option of the manufacturer, the weatherstrip shall be made of any suitable material that has rigidity and durability reasonably adequate for normal and continuous operation. The weatherstrip shall be installed in the window frame, or window, or both. It shall be effective to the point that it will prevent (after inside stops and stool are applied, window locked and before storm sash are installed) air infiltration or leakage in excess of 0.75 cubic feet of air per minute per foot of total sash crack perimeter, when subjected to wind pressure equivalent to 25 miles per hour.

The window tested shall be a 2 light design and have a sash opening size of 2'8" x 4'6".

3.1.5 BALANCING—The window shall consist of two sash, with top sash stationary and bottom sash operative. The operative sash shall be equipped with a mechanical balancing device including, but not limited to, types generally known in the industry as spring, spiral, pulley with cord, tape, or chain; or, in lieu thereof one or both jambs may be equipped with an adjustable pressure weatherstrip. The device must be capable of holding the operative sash stationary in all positions. The energy required to operate the operative sash when in motion shall not exceed that required to lift the weight of the sash plus a friction load of 1.5 pounds for every 6 inches of part thereof in combined length of both stiles.

3.1.6 SPECIES OF LUMBER—Lumber used for wood parts of the frame, window, storm sash, and screens shall be of the species listed below. Not more than two species may be used in any one frame, or more than one species in any one window, storm sash or screen. (Ponderosa pine, Idaho white pine, and Sugar pine are considered interchangeable.)

Incense cedar	Western larch	Sugar pine
Western red cedar	Lodgepole pine	Redwood ²
Cypress	Idaho white pine	Engelmann spruce
Douglas fir	Northern white pine	Sitka spruce
White fir	Ponderosa pine	
West coast hemlock	Southern yellow pine	

3.1.7 FINGER JOINTS—A quality finger joint is defined as a series of fingers machined on the ends of two pieces to be joined, which mesh together and are held firmly in position by a water-resistant adhesive. The parts joined by the finger joint must be precision machined. The water-resistant adhesive shall conform to Federal Specification MMM-A-125 (latest issue), or be such as may be used for Type II plywood (water-resistant bond) as defined in Commercial Standard CS35-61 (or latest revision), Hardwood Plywood, or equal.³

4. DETAIL REQUIREMENTS FOR WINDOW FRAMES

4.1 SPECIES OF LUMBER—The window frame shall be manufactured from the wood species named in 3.1.6.

4.2 GRADING—All exposed parts of the window frame shall be free from defects, except that slight surface checks not over 1/8 in. in depth and 2 in. in length, an occasional sound knot the size of which is not over 1/8 in. in diameter, or occasional blemishes or knurls not more than 3/8 in. in diameter shall be permitted. The unexposed surfaces of these parts shall have no defects that are structurally

¹ Copies of Commercial Standards referenced herein, are obtainable from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402

² Where redwood is used, nails and other fasteners shall be either galvanized or nonferrous.

³ Copies of Fed. Spec. MMM-A-125, Adhesives, Casein Type, Water and Mold Resistant, may be obtained for 10 cents each from the Business Service Center, GSA, 7th and D Sts., S. W., Washington, D. C. 20407.

unsound. Finger joints as defined in 3.1.7 will be permitted in all members of window frame except the sill and the outside casing wider than 2 in.

4.2.1 The term "free from defects," as used in this standard to apply to various parts, shall not exclude the use of pieces with light-brown stain, and with light to moderate streaks. In defining defects, grading rules of the Southern Pine Inspection Bureau, West Coast Lumber Inspection Bureau, Western Pine Association, National Hardwood Lumber Association, Redwood Inspection Service, and of other associations not mentioned herein that are applicable to species not covered by the above-named associations, shall govern on the species covered by the respective association's grading rules.

4.3 CONSTRUCTION — In accordance with the standard practice of the individual manufacturer, frames shall be manufactured with the side jambs dadoed or notched to receive the head jamb and sill, or the cross members dadoed or notched to receive the side jambs. The width of such dado or notch shall be not more than $3/64$ in. wider than the thickness of the butting member. The frame opening in height and width, which is controlled by the head jamb, the sill, and the two side jambs, shall be within plus or minus $1/32$ in. of the specified opening size, except in the width of those units so designed that the operative sash may be removed from the frame without removing the inside stops or parting stops.

4.4 SILL—The sill shall be at least $1\text{-}5/16$ in. thick at its thickest part (when measured between two parallel planes representing (1) the highest point on the top surface of the sill and (2) the bottom of the sill and these planes shall be parallel to the bottom of the sill.) and may be machined from solid stock or glued-up stock having a Type I bond as described in the latest edition of Commercial Standard CS35-61. Two piece sills are acceptable. When main sill and undersill are used (see section on nomenclature and definitions) the main sill shall be at least $23/32$ in. at its thickest part and the undersill shall be at least $1\text{-}5/16$ in. at its thickest part and $3\frac{1}{2}$ in. at its widest part with a tongue and groove connection between main sill and undersill. The two pieces shall be nailed together with at least 6d casing nails not to exceed 3 in. from side jamb and spaced not to exceed 10 in. on centers.

When main sill and sill nosing are used (see section on nomenclature and definitions) both the main sill and its nosing shall be at least $1\text{-}5/16$ in. at their thickest point. The parts shall be joined together with a double tongue and groove joint with the grooves run on the edge of the main sill and the tongues run on the nosing. The top edge of one tongue shall be flush with the top surface of the nosing and this surface shall be below the top surface of the main sill. The sill nosing shall be fastened to the main sill by at least 16d cement coated casing nails driven through the edge of the nosing into the main sill with at least $1\frac{1}{2}$ in. penetration into the main sill. The nails should be spaced not to exceed 14 in. on center with one nail within 3 in. of each end of the sill and a minimum of 3 nails per sill. Other fastenings with at least equivalent holding power as certified by an accredited testing laboratory, may be used when fastening nosing to main sill. At the option of the manufacturer, a Type I adhesive may be used in conjunction with a tongue and groove or flush joint provided the above nailing schedule is followed. Bottom side and inside edge of sill are considered not exposed. Bevel of sill shall be 14° with a tolerance of 1° , plus or minus, to correspond with the bevel of bottom rail of bottom sash.

4.5 JAMB AND BLIND STOP.

4.5.1 Side jambs and head jambs shall be at least $3/4$ in. thick with a plus tolerance of $1/32$ in. The blind stops when required, shall be not less than $1/2$ in. thick when required by wall construction. A tongue-and-groove joint is required between blind stop and jamb.

4.5.2 The width of the blind stops shall be at least the thickness of the jamb plus $1/2$ in. projection from face of jamb. The width of the jambs (including blind stops) shall be within $1/16$ in. plus or minus, of ordered size.

4.5.3 The back side of the jamb and that portion covered by the weatherstrip are not to be considered exposed. All other surfaces of the jamb visible after the unit is assembled shall be considered exposed.

4.5.4 The blind stop shall be nailed to the edge of the jamb proper with 6-penny box or common nails (if blind stops are under $3/8$ inch thick at the junction with the jamb, 4-penny nails may be used), in accordance with the minimum number specified below, and located as indicated.

On vertical blind stops:

- 3 nails per side jamb on sizes over 2'6" and not over 3'6" in height.
- 4 nails per side jamb on sizes over 3'6" and not over 4'6" in height.
- 5 nails per side jamb on sizes over 4'6" and not over 5'6" in height.
- 6 nails per side jamb on sizes over 5'6" and not over 6'6" in height.
- 1 nail, as specified above, shall be within $3\frac{1}{2}$ " of head jamb and 1 nail shall be within $3\frac{1}{2}$ " of sill.

On horizontal blind stops:

- 3 nails per head jamb on sizes not over 2'8" in width.
- 4 nails per head jamb on sizes over 2'8" and not over 4'4" in width.
- 1 nail, as specified above, shall be within 6" of each end of blind stop.

4.5.4.1 Or, at the option of the fabricator, machine driven knurled pins may be used for nailing the blind stop to the jamb. The pins shall have a diameter of not less than #15 gauge standard wire and a length, after driving of not less than a 6-penny box or common nail. The minimum number of pins shall be as specified below, and the pins shall be located as indicated:

On vertical blind stops:

- 3 pins per side jamb on sizes over 2'6" and not over 3'6" in height.
- 4 pins per side jamb on sizes over 3'6" and not over 4'6" in height.
- 5 pins per side jamb on sizes over 4'6" and not over 5'6" in height.
- 6 pins per side jamb on sizes over 5'6" and not over 6'6" in height.
- 1 pin, as specified above, shall be within $3\frac{1}{2}$ " of head jamb and 1 pin shall be within $3\frac{1}{2}$ " of sill.

On horizontal blind stops:

- 3 pins per head jamb on sizes not over 2'8" in width.
- 4 pins per head jamb on sizes over 2'8" and not over 4'4" in width.
- 1 pin, as specified above, shall be within 6" of each end of blind stop.

(See paragraph 4.6.3.1. for nailing casing or brick mold, blind stop and jamb in one operation.)

SIDE JAMBS DADOED FOR SILL—SILL DADOED FOR MULLION JAMBS

Jamb Width Exclusive of Blind Stop and Inside liner	Minimum number 6-penny box or common nails through side jamb into end of sill	Minimum number 10-penny box or common nails through sill into end of each mullion jamb ¹
Up to 4"	3	3
4" to 5"	4	4
5" and over	5	5

¹ In lieu of above, one less nail may be used through sill into end of each mullion jamb if one nail is driven through sill into end of mullion casing.

4.5.5 Each joint between head jamb and side jambs shall be nailed as follows:

Jamb width exclusive of Blind stop and inside liner	Minimum number 6-penny box or common nails
Up to 4"	3
4" to 5"	4
5" and over	5

If overhead balances are installed, one nail less than shown above may be used.

4.5.6 Each joint between sill and side or mullion jambs shall be nailed as follows (see table at top of page):

SILL DADOED FOR SIDE AND MULLION JAMBS

Jamb Width exclusive of Blind stop and inside liner	Method "A" * Minimum number of 10-penny box or common nails through sill into end of each side and mullion jamb
Up to 5"	4
5" and over	5

* Method "B" and "C" may be used at option of fabricator.

Method "B"—One less nail may be used through sill into ends of side jambs if two 6-penny box or common nails are toenailed through the jamb into the sill.

Method "C"—One less nail may be used through sill into ends of side and mullion jamb if one nail is driven through sill into end of each side and mullion casing.

4.5.7 Where the subsill is used, subsill and side jambs shall be nailed with at least four 6-penny box or common nails per joint regardless of which member is dadoed, and one 8-penny nail driven through underside of sill into end of casing.

4.5.8 Other fastenings with at least equivalent holding power, as certified by an accredited testing laboratory, may be used under paragraphs 4.5.4 through 4.5.7.

4.6 CASING

4.6.1 The thickness of the casings shall be at least $\frac{3}{4}$ in. Casings shall be at least $1\frac{3}{4}$ in. wide with a manufacturing tolerance of minus $1/16$ in.

4.6.2 Exposed portions of casings shall be free from defects, as defined in 4.2 and 4.2.1 on face and two edges when used in frame walls, on only one exposed edge and that portion of the face exposed when brick mold is planted on for brick-veneer construction.

4.6.3 The casing and/or brick mold shall be face-nailed to the jamb with 6-penny casing nails on casing not over 25/32 in. thick, and with 8-penny casing nails on thicker casing or brick mold; and the nails shall be spaced in accordance with the minimum number specified below, and located as indicated.

On vertical casings:

- 4 nails per casing on sizes over 2'6" and not over 3'6" in height.
- 5 nails per casing on sizes over 3'6" and not over 5'6" in height.
- 6 nails per casing on sizes over 5'6" and not over 6'6" in height.
- 1 nail, as specified above, shall be within 5" of head casing and 1 nail shall be within 5" of sill.

On horizontal casings:

- 3 nails per casing on sizes not over 2'0" width of frame opening.
- 4 nails per casing on sizes over 2'0" and not over 3'0" width of frame opening.
- 5 nails per casing on sizes over 3'0" and not over 4'4" width of frame opening.
- Head casing shall have 1 nail at each end as near to intersection of head and side jamb as balances will allow, and mitered corners of casings shall be cross-nailed through edges.

4.6.3.1 Or, at the option of the fabricator, machine driven knurled pins may be used for nailing the casing or brick mold, blind stop and jamb together in one operation. The pins shall have a diameter of not less than #13 gauge standard wire and a length, after driving, of not less than an 8-penny casing nail. The minimum number of pins shall be as specified below, and located as indicated.

On vertical casings:

- 5 pins per casing on sizes over 2'6" and not over 3'6" in height.
- 7 pins per casing on sizes over 3'6" and not over 5'6" in height.
- 9 pins per casing on sizes over 5'6" and not over 6'6" in height.
- 1 pin, as specified above, shall be within 5" of head casing and 1 pin shall be within 5" of sill.

On horizontal casings:

- 3 pins per casing on sizes not over 2'0" width of frame opening.
- 5 pins per casing on sizes over 2'0" and not over 3'0" width of frame opening.
- 7 pins per casing on sizes over 3'0" and not over 4'4" width of frame opening.

Head casing shall have 1 pin at each end as near to intersection of head and side jamb as balances will allow, and mitered corners of casings shall be cross-nailed through edges.

(See paragraph 4.5.4 for nailing blind stop and jamb only.)

4.6.4 Mullion casing shall receive twice the number of nails as specified above for one side casing, except that where a one-piece solid mullion is used, the number of nails may be the same as for one side casing.

4.6.5 All nails used in the assembly of the frame shall be coated, except that bright nails may be used in nailing

the blind stops to the pulley stiles and head jambs; however, when redwood is used for blind stops or head jambs, or both, nails or other fasteners shall be either galvanized or nonferrous. Knurled machine driven pins need not be coated.

4.6.6 Other fastenings with at least equivalent holding power, as certified by an accredited testing laboratory, may be used under pars. 4.6.3 through 4.6.5.

4.7 DRIP CAP.

4.7.1 Thickness and width of drip cap may vary among manufacturers, but it shall be at least $\frac{3}{4}$ in. thick at thickest part and shall project at least $\frac{3}{8}$ in. beyond face of head casing. Drip cap shall either be rabbeted or have water-drip groove on under side of front edge, or both.

4.7.2 The top and outside edge faces of the drip cap shall be free from defects in accordance with pars. 4.2 and 4.2.1. The nails used in the drip cap shall be 6-penny box or common nails and shall be spaced not over 15 in. apart and not less than 3 in. from each end.

4.7.2.1 Or, at the option of the fabricator, machine driven knurled pins may be used in nailing the drip cap. The pins shall have a diameter not less than #15 gauge standard wire and a length, after driving, not less than a 6-penny box or common nail and shall be spaced not over 12 in. apart and not less than 3 in. from each end.

4.7.2.2 Other fastenings with at least equivalent holding power, as certified by an accredited testing laboratory, may be used to secure the drip cap.

4.8 OTHER FRAME PARTS—On those frames using reversible blind stops, such parts shall not be considered as exposed, and they shall be nailed to the back side of the brick mold or casing, the same minimum number of nails as listed for both sides and head casings being used.

4.9 BRACES—After the frame is completely assembled and the sash installed, a horizontal center brace shall be applied to maintain an equal opening width between side jambs from head to sill. Center brace may be eliminated when one sash is permanently fastened in a fixed position. Frames shall be squared by the fabricator, using a rod to make diagonal corners an equal distance apart, and at least one diagonal brace not less than 24 in. long shall be nailed across the frame at one corner while in the squared position.

5. DETAIL REQUIREMENTS FOR WINDOWS, STORM SASH AND SCREENS

5.1 The provisions of the Commercial Standard for Ponderosa Pine Windows, Sash and Screens, CS163-64 (or later edition) shall apply to both top and bottom sash, storm sash and screens in this Standard, except as otherwise specifically provided herein. Window opening sizes not shown in CS163-64 may be used where sizes of wood parts are not smaller than those required by CS163-64, except as provided in par. 5.5.

5.2 MATERIAL—All windows, storm sash and screens used in single-hung wood window units shall be manufactured from the species of lumber named in 3.1.6. Finger joints, as defined in 3.1.7 shall be permitted in storm sash and screens.

5.3 CONSTRUCTION—GENERAL—Sash and all tenoned screens shall be well clamped together and rail tenons carefully pinned with barbed steel pins set through the tenon. All $1\frac{3}{8}$ in. sash shall have vertical and horizontal bars tenoned to fit into mortise of stiles and rails, and shall have one barbed steel pin inserted at each end of at least one vertical bar, and at each end of all horizontal bars. Muntins are to be franked, tenoned and inserted into franked

mortises of stiles, rails or bars. In lieu of the above construction requirements, both bars and muntins may be slip-coped, but in such case they must be secured at their juncture with other members by toenailing or stapling. Machine-driven pins, barbed or smooth, not less than 0.008 of a square inch in cross-sectional area may be used. Stiles and rails shall have solid stickings. All joints shall be coped and well fitted. All stiles and rails of putty-glazed sash shall have grooves and/or indentations in the putty rabbet.

5.3.1 MORTISED AND TENONED CONSTRUCTION—Windows, storm sash and window screens may be made by mortised and tenoned construction. The tenon width shall be not less than two-thirds of the over all rail width. Mortised and tenoned sash and window screens shall be pinned, in accordance with 5.3, with not less than 1 pin at each end of top rail, check rails, and middle rail, and with not less than 2 pins at each end of bottom rail.

5.3.2 SLOTTED CONSTRUCTION—Windows, storm sash, and window screens may be made by slotted construction. The tenon shall be the full width of the rail. Slotted sash and window screens shall be pinned, in accordance with 5.3, with not less than 1 pin at each end of top rail, check rails, and middle rail, and with 2 pins at each end of bottom rail.

5.3.3 DOWELLED CONSTRUCTION—Window screens may be made by dowelled construction. Stiles and rails shall be bored to receive dowels not less than $\frac{3}{8}$ in. in diameter by 3 in. in length. Dowels shall have glue grooves and/or indentations and be sized for a drive fit. Dowels shall be set in water-resistant glue and extend one-half their length into each stile and rail, and be assembled under pressure. The number of dowels at each end of the rails shall be as follows:

Top rail—1 or 2 dowels, at the option of the manufacturer.

Center rail—1 dowel.

Bottom rail—2 dowels.

5.4 STICKING—The sash sticking may be ogee, ovolo, or any other design, provided the glass rabbet for $1\frac{3}{8}$ in. sash is a minimum of $\frac{3}{16}$ in. deep by $\frac{1}{2}$ in. wide, and for storm sash, $\frac{3}{16}$ in. deep by $\frac{3}{8}$ in. wide.

5.5 SASH STILES AND RAILS—Sash stiles and rails may be made smaller than the sizes shown in Commercial Standard 163-64, as may be necessary in fitting for weatherstrip.

5.6 DIVIDED-LIGHT WINDOWS—Divided-light windows made on two-light layouts are acceptable under this standard.

5.7 FINISHED THICKNESS—The finished thickness of all $\frac{3}{4}$ in. window screens shall not be less than $21/32$ in.

5.8 BOTTOM RAILS—Bottom rails of all windows, storm sash, and $1\frac{1}{8}$ in. window screens shall be beveled to a pitch of 14° , with a tolerance of plus or minus 1° (approximately 3 to 12 in.). $\frac{3}{4}$ in. window screens may be beveled to a pitch of 14° , with a tolerance of plus or minus 1° , or may be an oval bottom edge.

5.9 The bottom sash of all windows shall be made to operate properly in the frame of the unit in conjunction with the balancing device and weatherstrip furnished with the unit.

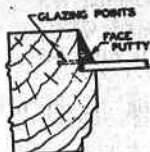
5.10 GLAZING—Unless otherwise specified, all windows and storm sash shall be glazed with single strength "B" glass. The maximum size glass in any sash shall be 76 united inches (width plus height) for single strength "B" glass, and 100 united inches for double-strength "B" glass. The glass in all $1\frac{3}{8}$ in. sash shall be either bedded in putty or glazing compound, or putty glazed on the reverse side using a secondary putty rabbet, or, at the option of the fabricator or manufacturer, they may be adhesive bedded. However, regardless of the method used, a positive seal

shall be provided between the glass and the wood on both sides of the glass. In addition, all windows (including both the check rails), and sash shall be either face puttied or wood stop glazed. In lieu of the above methods, unless otherwise specified, sash may be glazed in solid sticking at the time of assembly, after bedding compound has been applied in the sash groove. Storm sash may be either face puttied or wood stop glazed. Glazing methods described herein shall be in accordance with the following:



5.10.1 BEDDING—A thin layer of putty or bedding compound is placed in the rabbet of the sash and the glass pressed into this bed. Glazing points are then driven into the wood and the sash is face-puttied.

The sash is then turned over and the excess putty or glazing compound that emerged on the other side is removed.



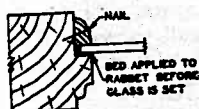
5.10.2 FACE PUTTYING—Glass is inserted in the glass rabbet and securely wedged where necessary to prevent shifting. Glazing points are also driven into the wood to keep the glass firmly seated. The rabbet

is then filled with putty, the putty being beveled back against the glass.



5.10.3 BEDDING, SECONDARY PUTTY RABBET—After the sash has been face-puttied, it is turned over and putty is run into the secondary putty rabbet and into any voids that may exist between the glass and the wood parts.

5.10.4 ADHESIVE BEDDING—A continuous ribbon or bead of an effective flexible adhesive bedding material is run into the sash rabbet, in a neat manner, and the glass is pressed into the rabbet with sufficient pressure to insure a bond between the glass and the wood throughout the full perimeter of the rabbet. The adhesive material shall be of such a nature that the bond between the glass and the wood of the stiles, rails, and muntins and bars, if any, is equal to or greater than that provided by the use of glazing points and wedges, and in addition shall form a water tight seal. If found necessary by the manufacturer to achieve full contact about the perimeter, one or more glazing points may be used. After the adhesive has developed 50% of its maximum bond strength according to the specifications of the manufacturer, the sash shall be face-puttied.



5.10.5 WOOD-STOP GLAZING—A thin layer of putty or bedding compound is placed in the rabbet of the sash and the glass pressed onto this bed. Glazing points are not required. Wood stops shall be securely

nailed in place. The sash is then turned over and the excess putty or glazing compound that emerged on the other side is removed. The width of rabbet and type of wood bead shall be optional with the manufacturer.

5.11 INSECT SCREENING—Either aluminum, galvanized steel, or bronze insect wire screening conforming to the latest edition of Commercial Standard CS138, Insect Wire Screening, shall be used on window screens, at manufacturers' option. Fiber glass screening conforming to the latest edition of Commercial Standard CS248 Vinyl-Coated Glass Fiber Insect Screening and Louver Cloth, may be used on 1½ inch screens if applied in a groove with a

spline sufficiently pliable to engage the screening and hold it securely in the groove. The mesh of the insect screening shall be 18 by 14, or 18 by 16.

Metal Screening in window screens shall be either rolled into a groove on the face of the stiles and rails or tacked on the face of the stiles and rails. When screening is tacked, the tacks or staples (and in all instances the brads or staples for applying the molding) shall be of copper or brass where bronze screening is used; of galvanized or plain steel where galvanized screening is used; or of galvanized steel, zinc, tinned steel, stainless steel, blued steel, bright steel or aluminum where aluminum screening is used. The molding on window screens may be either flush or raised. Screen molding shall be mitered at the four corners.

5.12 HANGING HARDWARE—When furnished, hanging hardware to secure storm sash and screens, or either, shall be galvanized, cadmium plated, zinc-coated, or prime-coat finished.

5.13 OPTIONAL MATERIALS—In lieu of wood storm sash and wood screens, at the option of the manufacturer, insulating lights may be used, consisting of window glass set in a metal rim and sealed with glazing compound. Aluminum-frame screens with 18 by 14 or 18 by 16 mesh screening (see 5.11) rolled into a groove in the frame and held in place by a suitably formed spline, are acceptable.

6. DESIGNS, LAYOUTS AND OPENING SIZES

6.1 Designs and layouts of windows, window screens and storm sash shall be optional with the manufacturer or fabricator. Window units, however, are generally available in sizes which meet the basic requirements of the American Standards Association Project A62.1, Basis for Coordination of Building Materials and Equipment.⁴

6.2 The broad purpose of Project A62 is to secure maximum economies and simplification for the building industry through improved standardization. Since it is not practicable to standardize the finished building, this broad purpose is applied to building products and methods by the coordination of sizes for component building parts.

6.3 The basis for this coordination is a 4-inch increment applied to the sizes and assembly of parts and to the layout of buildings. The increment or module, applying to both vertical and horizontal dimensions, serves as the spacing for a uniform three-dimensional grid to which the building layout and details are referenced.

6.4 The sizes and dimensions for coordination, while based on a 4-inch module or increment, are not necessarily multiples of 4 inches. From the illustration (fig. 1), it will be seen how the standards for single-hung windows meet the requirements for coordination by being built to the following measurements:

Widths — Multiples of 4 inches

Heights — Multiples of 4 inches, plus 2 inches

6.5 It will be observed from figure 1 that the grid opening is a multiple of 4 inches both in width and in height. A window unit will meet the requirements for coordination if so constructed that it can be used in any number of 4-inch increments or modules as indicated by the dotted grid lines. It will be noted that the standard window opening in all cases is 4 inches less in width and 6 inches less in height than the grid opening.

⁴Copies of the latest edition of A62.1 are available for \$1.00 each from the American Standards Association, 10 East 40th St., New York, N. Y. 10016.

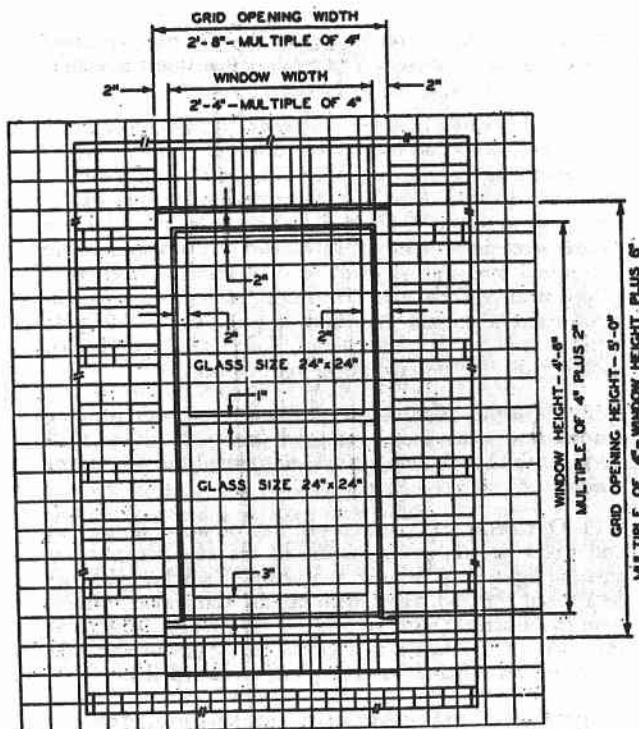


FIGURE 1. Relation of window to grid opening—brickwall.

7. LABELING

7.1 LABELING—In order to assure the purchaser that he is getting a single-hung wood window unit of the quality specified herein, it is recommended that fabricators either individually or in concert with their trade associations, issue guarantees or grade-mark each such window unit by stamp, brand or label as conforming to this Standard. The following wording is recommended for the label:

"The single-hung wood window unit is guaranteed by the fabricator to conform to Commercial Standard CS266-64, as developed by the trade under the Commodity Standards Procedures of the U. S. Department of Commerce.

Name of fabricator"

8. NOMENCLATURE AND DEFINITIONS

8.1 The various terms used in this Standard are defined as follows:

Fabricator—The person or firm that assembles all of the component parts into a complete window unit.

Manufacturer—The person or firm that manufactures any of the component parts of the window unit.

Sash—A sash is a single assembly of stiles and rails made into a frame for holding glass, with or without dividing bars, to fill a given opening. It may be either open or glazed.

Window—A window consists of two or more single sash made to fill a given opening. It may be either open or glazed.

Window Unit—Window unit means a combination of the window frame, window, weatherstrip and balancing device, and, at the option of the manufacturer, screen and/or storm sash, assembled as a complete and properly operating unit.

COMPONENT PARTS:

Bar—A bar may be either vertical or horizontal and extend the full width or length of the glass opening.

Blind Stop—A thin strip of wood machined so as to fit the exterior vertical edge of the pulley stile or jamb and keep the sash in place.

Casing—Molding of various widths and thicknesses used to trim window openings.

Check Rails—Meeting rails sufficiently thicker than the window to fill the opening between the top and bottom sash made by the check strip or parting strip in the frame. They are usually beveled and rabbeted.

Dado—A rectangular groove cut across the grain of a frame member.

Drip Cap—A molding placed on the top of the head casing of a window frame.

Extension Blind Stop—A molded piece, usually of the same thickness as the blind stop, and tongued on one edge to engage a plow in the back edge of the blind stop, thus increasing its width and improving the weathertightness of the frame.

Frame (wood)—A frame is a group of wood parts so machined and assembled as to form an enclosure and a support for a window or sash.

Jamb—That part of any frame which surrounds and contacts the window or sash that the frame is intended to support.

Head Jamb—The horizontal member forming the top of the opening.

Jamb Liner—A small strip of wood, either surfaced 4 sides or tongued on 1 edge, which, when applied to the inside edge of a jamb, increases its width for use in thicker walls.

Rabbeted Jamb—A jamb with a rabbet run on one or both edges to receive a window or sash.

Side Jamb—The upright member forming the side of the opening.

Muntin—A muntin applies to any short or light bar, either vertical or horizontal.

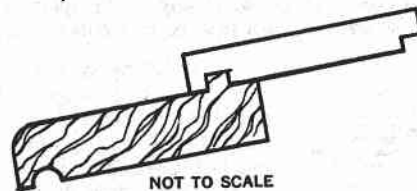
Notch—A rectangular channel, groove or recess (rabbet) cut out of the end or edge of a board or frame member. The cut out section may be continuous or may be dovetailed to receive another dovetailed member to complete the joint.

Parting Stop—A thin strip of wood let into the jamb of a window to separate the sash.

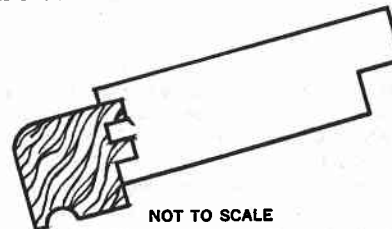
Rails—The cross, or horizontal pieces of the framework of a sash or screen.

Sill—The horizontal member forming the bottom of the frame.

Main Sill and Undersill—An upper, thinner member of a two-piece window sill resting on top of a thicker, lower member.



Main Sill and Nosing—A narrower exterior extension fastened to the outside face of a main window sill.



Solid Sticking—A mold that is worked on the article itself.

Stiles—The upright, or vertical outside pieces of a sash or screen.

Pulley Stile—A side jamb into which a pulley is fixed and along which the sash slides.

MEASUREMENT:

Between Glass—The measurement across the face of any wood part that separates two sheets of glass.

Face Measure—The measurement across the face of any wood part exclusive of any solid mold or rabbet.

Finished Size—The over-all measurement of any wood part including the solid mold or rabbet.

Outside Opening—The measurement of any given article from outside to outside.

Wood Allowance—The difference between the outside opening and the total glass measurement of a given window or sash.

HISTORY OF PROJECT

On January 19, 1960, the National Woodwork Manufacturers Association, Inc., requested the cooperation of the Commodity Standards Division (now Office of Commodity Standards, National Bureau of Standards), U. S. Department of Commerce in establishing a Commercial Standard for single-hung wood window units. A draft of the proposal which was prepared by Association members was submitted with the request. The proposed standard, TS5474, was circulated to representative producers, distributors, users, and key Government agencies for comment on February 24, 1960. It was temporarily withdrawn due to the nature of the comments received. However, on June 20, 1961 the NWMA recommended additional adjustments in accordance with the views of the industry, and the Recommended Commercial Standard, TS-5474A was widely circulated to the trade for general acceptance on July 20, 1961. On October 25, 1962 NWMA submitted additional changes in the sill construction. The Recommended Revision was circulated to the trade on February 7, 1963 and was reviewed by the Forest Products Laboratory. Some additional editorial recommendations were made by NWMA on December 16, 1963 and on January 27, 1964 to make this standard consistent with other wood window standards. Many endorsements in the form of signed acceptances from individual organizations concerned were received and were considered sufficiently representative to assure general industry use of the standard. Therefore, the establishment of a new Commercial Standard for Wood Single-Hung Window Units, designated CS266-64, was announced on February 17, 1964, to be effective for new production on March 17, 1964.

PROJECT MANAGER: Wm. H. Furcolow, Office of Commodity Standards, National Bureau of Standards, U. S. Department of Commerce, Washington, D. C. 20234.

TECHNICAL ADVISOR: L. O. Anderson, Division of Wood Engineering Research, Forest Products Laboratory, U. S. Department of Agriculture, Madison, Wisconsin, 53705.

STANDING COMMITTEE

The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Office of Commodity Standards, National Bureau of Standards, U. S. Department of Commerce which acts as secretary for the committee.

Representing Manufacturers:

Charles Sitterly, Caradco, Inc., Dubuque, Iowa
(Chairman)

Herman D. Thomas, Dierks Forests, Inc., Hot Springs, Ark.

M. W. Baker, Rock Island Millwork Co., Rock Island, Ill.

Representing Distributors:

J. Reese Jones, Jr., Victoria Sash & Door Co., P. O. Box 98, Shreveport, La.

S. M. Van Kirk, General Manager, National Building Material Distributors Association, 22 West Monroe Street, Chicago 3, Ill.

Representing Users:

Milton W. Smithman, National Association of Home Builders, 1625 I Street, N. W., Washington 6, D. C.

John A. Reidelbach, Jr., Home Manufacturers Association, 910 17th Street, N. W., Washington 6, D. C.

Robert J. Piper, Head, Dept. of Professional Practice, American Institute of Architects, 1735 New York Avenue, N. W., Washington 6, D. C.

ACCEPTORS

The manufacturers, distributors, users, and others listed have individually indicated in writing their acceptance of this Commercial Standard prior to its publication. The acceptances indicate an intention to utilize the Standard as far as practicable, but reserve the right to depart from it as may be deemed desirable. The list is published to show the extent of recorded public support for the Standard, and should not be construed as indicating that all products made by the acceptors actually comply with its requirements.

Products that meet all requirements of the standard may be identified as such by a certificate, grade mark, or label. Purchasers are encouraged to require such specific representations of compliance, which may be given by the manufacturer whether or not he is listed as an acceptor.

ASSOCIATIONS (General Support)

American Institute of Architects, Washington, D. C.
American Wood Window Institute, Chicago, Ill.
Associated General Contractors of America, Washington, D. C.
Home Manufacturers Association, Washington, D. C.
Mississippi Retail Lumber Dealers Association, Jackson, Miss.
National-American Wholesale Lumber Association, New York, N. Y.
National Association of Home Builders, Washington, D. C.
National Building Material Distributors Association, Chicago, Ill.
National Sash & Door Jobbers Association, Chicago, Ill.
National Woodwork Manufacturers Association, Chicago, Ill.
Ponderosa Pine Woodwork, Chicago, Ill.
Western Pine Association, Portland, Oreg.

FIRMS AND OTHER INTERESTS

Addison-Rudesal, Inc., Atlanta, Ga.
American Millwork Co., Oklahoma City, Okla.
American-Saint Gobain Corp., Kingsport, Tenn.
Ammann & Whitney, New York, N. Y.
Anson & Gilkey Co., Merrill, Wis.
Ashton, C. J., Royal Oak, Mich.
Barger Millwork Co., Statesville, N. C.
Beasley & Sons Co., Nashville, Tenn.
Binswanger Glass Co., Richmond, Va.
Boise Cascade Corp., Western Pine Division, Spokane, Wash.
Bradley-Southern Division, Potlatch Forests, Inc., Warren, Ark.
Building Supplies Co., Division of R. F. Trant Distributing Corp., Norfolk, Va.
Cameron, Wm. & Co., Waco, Tex.
Camlet, Thomas J., Architect & Engineer, Garfield, N. J.
Caradco, Inc., Dubuque, Iowa
Carnahan Manufacturing Co., Inc., Loogootee, Ind.
Circle Woodworking Corp., Richmond, Va.
Clarke Veneers and Plywood, Jackson, Miss.
Combs Lumber Co., Lexington, Ky.
Community Builders, Inc., Washington, D. C.
Concord Lumber Co., Inc., Albany, N. Y.
Concord Millwork Corp., Rochester, N. Y.
Cook-Anderson Co., Beaver, Pa.
Crestline Co., Wausau, Wis.
Darby, Bogner & Associates, Inc., Architects - Engineers, West Allis, Wis.
Davidson Sash & Door Co., Inc., Lake Charles, La.
Delta Millwork, Inc., Jackson, Miss.
Denis, W. J., & Co., Franklin Park, Ill.
Dierks Forests, Inc., Hot Springs, Ark.
Donlin Co., St. Cloud, Minn.
Dort-Wood Products, Inc., Flint, Mich.
Edwards Sash, Door & Lumber Co., Tampa, Fla.
Fellheimer & Wagner, Architects & Engineers, New York, N. Y.
Ft. Smith Sash & Door Co., Inc., Ft. Smith, Ark.
Gans, Carl H., Consultant to the Plywood, Veneer & Millwork Industry, New York, N. Y.
Goshen Sash & Door Co., Goshen, Ind.
H & S Lumber Co., Charlotte, N. C.
Harbor Sales Co., Inc., Baltimore, Md.
Harnischfeger Homes, Inc., Port Washington, Wis.
Hirzel, Charles K., Architect, New York, N. Y. (General Support)
Huttig Manufacturing Co., Muscatine, Iowa
Independent Screen Co., Oklahoma City, Okla.
Jackson Sash & Door Co., Inc., Jackson, Miss.
Jacksonville Sash & Door Co., Inc., Jacksonville, Fla.
Jamco Window Unit Corp., Northvale, N. J.
Jordan Millwork Co., Sioux Falls, S. Dak.

Keith, J. J. & Son, Fairfield, Ill.
 Kendem, Andrew A., & Sons, Inc., Minneapolis, Minn.
 Law, Law, Potter & Nystrom, Madison, Wis.
 Lester Brothers, Inc., Martinsville, Va.
 Loeb, Laurence M., Architect, White Plains, N. Y.
 Lumber & Millwork Co. of Philadelphia, Philadelphia, Pa.
 Madison Millwork, Inc., Jackson, Tenn.
 Mahoney Sash & Door Co., Canton, Ohio
 Marathon Millwork Corp., Wausau, Wis.
 McPhillips Manufacturing Co., Inc., Mobile, Ala.
 Melander, Clifford T., Montclair, N. J. (General Support)
 Melnick Corp., Northvale, N. J.
 Metler Bros., Klamath Falls, Oreg.
 Metropolitan Millwork, Inc., Brooklyn, N. Y.
 Misland Building Industries, Inc., Indianapolis, Ind.
 Miller, Miller & Associates, Architects, Terre Haute, Ind.
 Monarch Metal Weatherstrip Corp., St. Louis, Mo.
 Moore & Co., Dallas, Tex.
 Morgan Co., Oshkosh, Wis.
 Morgan Millwork Co., Baltimore, Md.
 Morgan Sash & Door Co., Lawton, Okla.
 Nebraska, University of, Lincoln, Nebr.
 Nixon Lumber Co., Inc., Memphis, Tenn.
 Norwood Sash & Door Manufacturing Co., Cincinnati, Ohio
 Oklahoma Sash & Door Co., Oklahoma City, Okla.
 Palmetto Sash & Door Co., Inc., Orangeburg, S. C.
 Pease Woodwork Co., Inc., Hamilton, Ohio
 Pittsburgh Testing Laboratory, Pittsburgh, Pa.
 Resnikoff, Abraham, Architect, Bronx, N. Y.

Reid, William H., Architect - Engineer, Whittier, Calif.
 Rinn-Scott Lumber Co., Chicago, Ill.
 Royal Glass & Millwork Corp., Englewood, N. J.
 Sanders Co., Baltimore, Md.
 Sears, Roebuck & Co., Chicago, Ill.
 Shinault Lumber Products, Inc., Memphis, Tenn.
 Southern Metal Products Corp., Memphis, Tenn.
 Southern Millwork Co., Division of Southern Mill & Manufacturing Co.,
 Tulsa, Okla.
 Southwestern Laboratories, Fort Worth, Tex.
 Stuetzel, Ralph, Inc., Architects - Engineers, Chicago, Ill.
 Teachout Sash, Door & Glass Co., Columbus, Ohio
 Texas, University of, Austin, Tex.
 Throop-Martin Co., Columbus, Ohio
 Unique Balance Division, S. H. Pomeroy Co., Stamford, Conn.
 United Wood Products Co., Inglewood, Calif.
 Vaughan, Geo. C. & Sons, San Antonio, Tex.
 Vogel, Willis A., Architect & Consultant, Toledo, Ohio
 Welch, Carroll E., Huntington, N. Y.
 White Pine Sash Co., Spokane, Wash.
 Whittier-Ruhle Millwork Co., Ridgefield, N. J.
 Williams, O. B., Co., Seattle, Wash.
 Young, Ray, Mill & Manufacturers Representative, Radburn, N. J.
 Zegers, Inc., Chicago, Ill.

U. S. GOVERNMENT AGENCIES

Army, Department of the, Office, Chief of Engineers, Washington, D. C.
 Interior, Department of the, Washington, D. C.
 Veterans Administration, Washington, D. C.

ACCEPTANCE OF COMMERCIAL STANDARD

CS266-64 WOOD SINGLE-HUNG WINDOW UNITS

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this Commercial Standard.

Date _____

Office of Commodity Standards
National Bureau of Standards
U.S. Department of Commerce
Washington, D.C., 20234

Gentlemen:

We believe that this Commercial Standard constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production¹ distribution¹ purchase¹ testing¹
of this commodity.

We reserve the right to depart from the standard as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer _____

(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer _____

Organization _____

(Fill in exactly as it should be listed)

Street address _____

City, State, and ZIP code _____

¹ Underscore the applicable words. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interest, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial Standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of Commercial Standards is to establish, for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the standard, where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function, performed by the Department of Commerce in the voluntary establishment of Commercial Standards on a nationwide basis is fourfold: First, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

federal register



National Bureau of Standards VOLUNTARY STANDARDS

Action on Proposed Withdrawal

In accordance with § 10.12 of the Department's "Procedures for the Development of Voluntary Product Standards" (15 CFR Part 10, as revised; 35 FR 8349 dated May 28, 1970), notice is hereby given of the withdrawal of the following Commercial Standards:

- CS 120-58, "Ponderosa Pine Doors."
- CS 163-64, "Ponderosa Pine Windows, Sash and Screens (Using Single Glass and Insulating Glass)"
- CS 171-58, "Hardwood Veneered Doors (Solid-Core, Hollow-Core and Panel and Sash)"
- CS 190-64, "Wood Double-Hung Window Units"
- CS 204-64, "Wood Awning Window Units"
- CS 205-64, "Wood Casement Window Units"
- CS 208-57, "Standard Stock Exterior Wood Window and Door Frames"
- CS 262-63, "Water-Repellent Preservative Non-Pressure Treatment for Millwork"
- CS 264-64, "Wood Horizontal-Sliding Window Units (All Sash Operating)"
- CS 265-64, "Wood Horizontal-Sliding Window Units (One or More Non-Operating Sash)"
- CS 266-64, "Wood Single-Hung Window Units"

It has been determined that each of these standards has become technically inadequate, and in view of the existence of up-to-date National Woodwork Manufacturers Association standards for the products covered, revision of the Commercial Standards would serve no useful purpose.

This action is taken in furtherance of the Department's announced intentions as set forth in the public notice appearing in the FEDERAL REGISTER of March 27, 1974 (39 FR 11319), to withdraw these standards.

The effective date for the withdrawal of these standards will be 60 days after the publication of this notice. This withdrawal action terminates the authority to refer to these standards as voluntary standards developed under the Department of Commerce procedures.

Dated: May 30, 1974.

RICHARD W. ROBERTS,
Director.

[FR Doc.74-12838 Filed 6-4-74;8:45 am]